

MODEL KS-220

**3*2-STAGES - PM10A_B - PM2,5A_B - PM1A_B - CASCADE
CHAMBER IMPACTOR WITH BACKUP FILTER
FOR THE FRACTIONATED SAMPLING OF SOLID PARTICLES AND
AEROSOLS
IN-STACK VERSION**

ISO EN 9096 STANDARD



SPECIAL FEATURES

- ✎ Rapidly changeable impactor stages suitable for performing sequential, continuously periodical measurements.
- ✎ 30% smaller external dimensions, 40% less mass performing the same flow rate.
- ✎ The chambers of the impactor stages can be well separated for scaling.
- ✎ Cleaning and the periodic size-control of the annular vent nozzles are extremely simple.
- ✎ Dust storage capacity is variable by the changing of the collector plates.
- ✎ The static and dynamic pressure exhaust probes and the temperature sensor are assembled together in the probe shank.
- ✎ Automatic, isokinetic sampling, measurement control and evaluation by the KS-400-S type device along with a Windows based software.

1. Purpose

The **KS-404** type portable, partial gas flow emission type sampling circuit implemented with the **KS-220** type 3×2 staged cascaded impactor – in automatic operation - is capable of the isokinetic, continuously periodical, total or fractionated sampling of solid particles in flowing air or gas.

The **KS-220** type cascaded impactor is the improved version of the **OH-610-B** type impactor. In accordance with the latest environmental regulations it is capable of the gravimetric separation of the 10; 2,5 and 1 [µm] sized particles.

The **KS-404** type measuring circuit implemented with the **KS-220** type cascaded impactor simultaneously with the gravimetric determination of concentration of solid particles and the fractional composition of the flowing air or gas the device is capable of measuring and monitoring the temporal changes of the the velocity of the main gas flow or the sampled medium.

2. Comprehensive technical description

The double stage impactor device offers completely new solutions. Even its evaluation system follows the latest fluid mechanical configurations.

For the sake of increasing the impact effect and decreasing dimensions particles are accelerated in an annular nozzle to the proper impact velocity. To increase the efficiency of the impacts and to decrease entrainment the sampler is built up from a double impactor stage with identical separation characteristics. The **KS-220** type cascaded impactor consists of a lead-in diffuser, three impactor stages one after another and an endfilter. To avoid reproduction errors occurring owing to the different adhesive capacity of particles, stages have a chamber configuration and are properly separated for scaling.

The **KS-220** type cascaded impactor conforming with the latest environmental standards – ISO-EN 9096 – has been primarily developed to complete the **KS-404** type automatic, isokinetic sampling circuit, although it is compatible with any of the **KS-104** or **KS-404** type probe shanks. External dimensions and connecting thread sizes are completely compatible with the inlet pipes and probe shanks.

The layout of the **KS-404** type measurement circuit completed with the **KS-220** type impactor is shown in **Figure 1**.

Figure 2. shows the cross-section of the **KS-220** type impactor assembled with the probe shank.

The sampled gas flows through the diffuser to the first so called 10A then to the 10B chamber. Particles with the cut-off size (diameter of dust particles 50% separation efficiency) of 10 [µm] precipitate on the collector plates (3) and (4). Particles with sizes 2,5 [µm] precipitate on (5) and (6), and with 1,0 [µm] on (7) and (8) collector plates.

The sampled gas cleansed from solid particles leaves the impactor through the endfilter (9). The **KS-220** preseparator type impactor can be used independently of the probe shank. **Figure 3.** shows an application example. The impactor in a disassembled state is shown in **Figure 4.**

The separation characteristics of the **KS-220** impactor, so called „S”-curves are represented in **Figure 5.** The nominal change of flow rate as a function of the gas temperature is represented in **Figure 6.** If different measurement parameter are required – higher temperature or high dust concentration which requires higher volume flow rate - the use of the **KS-218** type impactor is recommended.

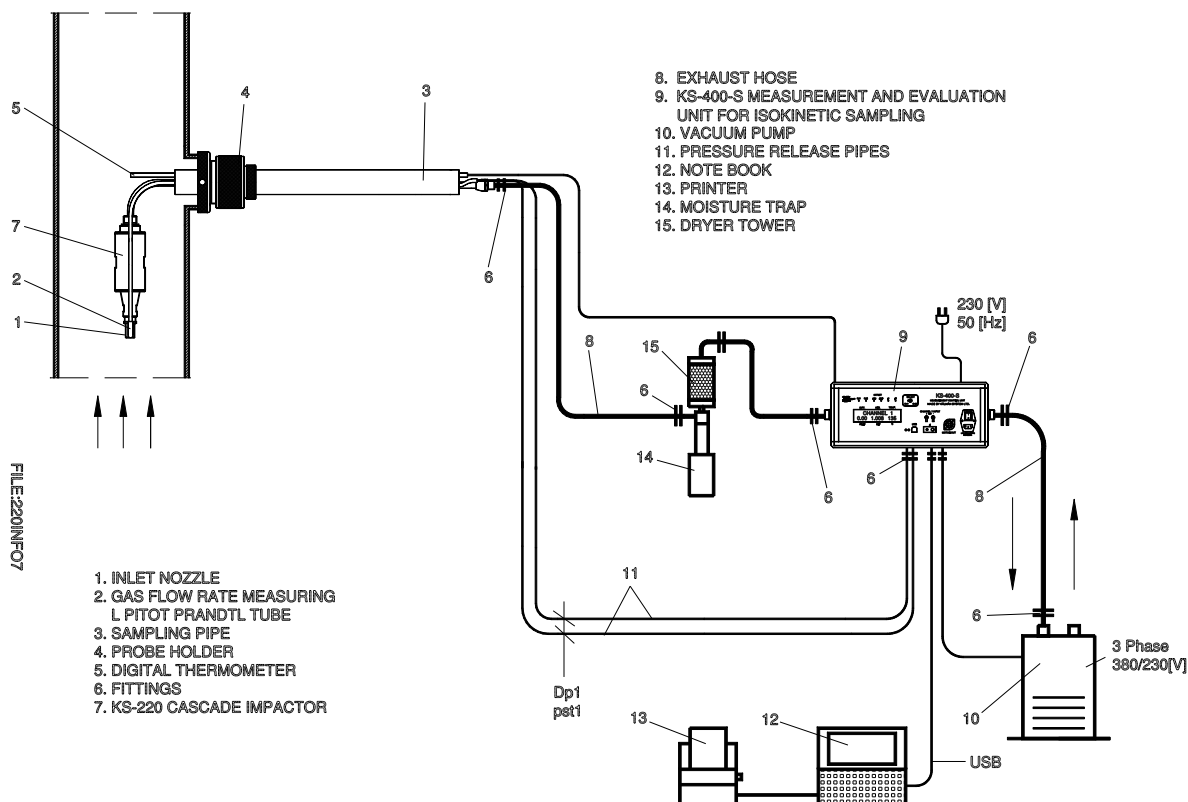


Figure 1.

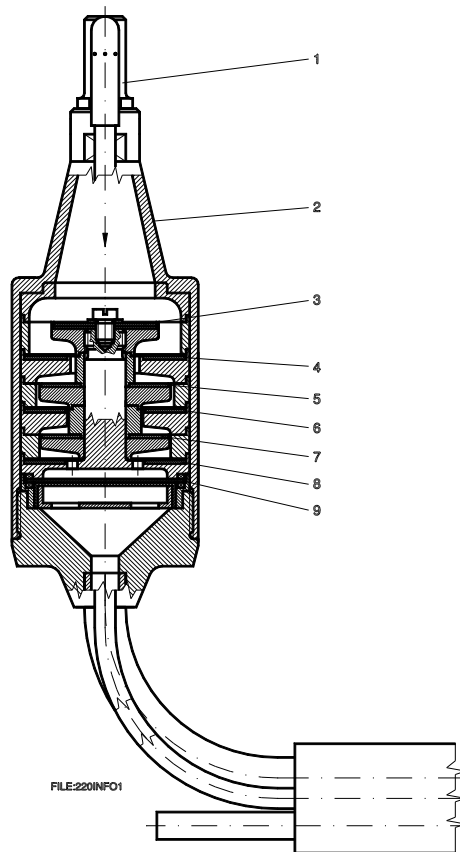


Figure 2.

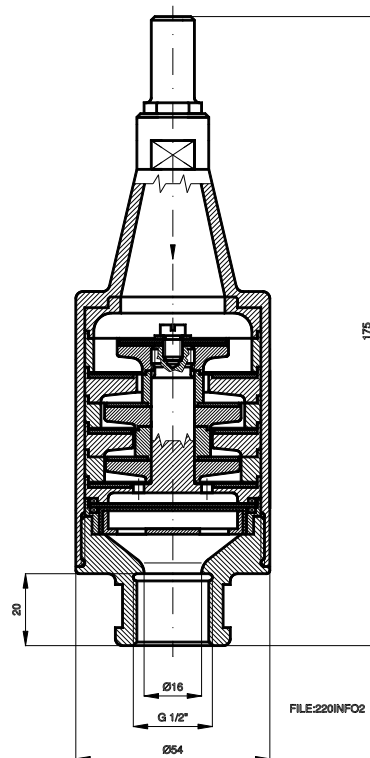


Figure 3.



Figure 4.

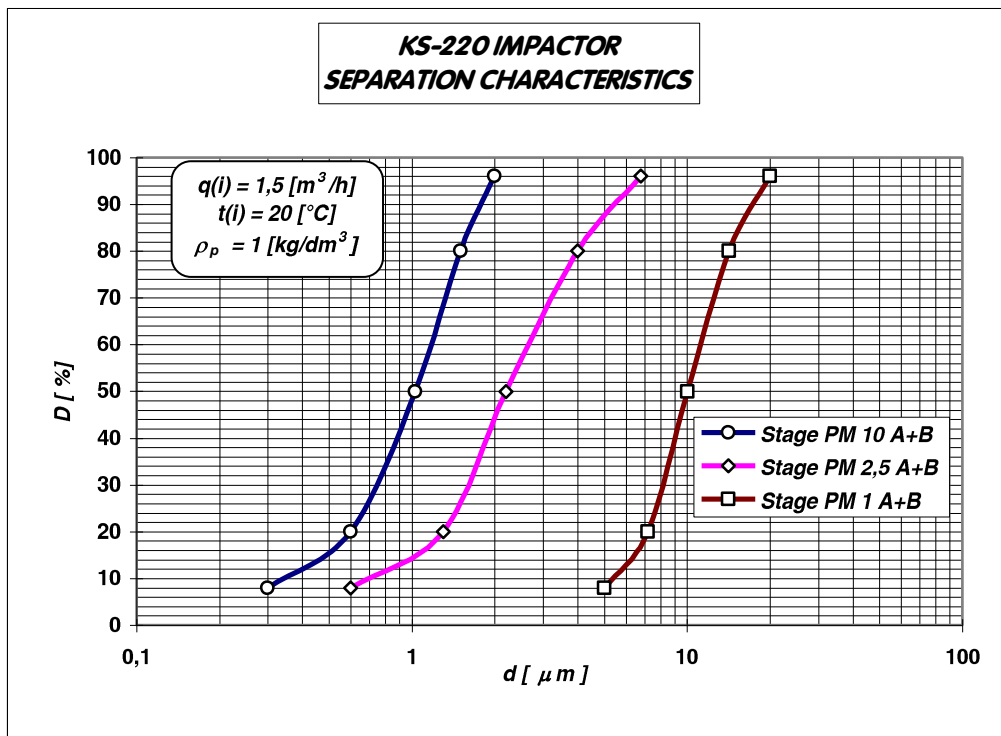


Figure 5.

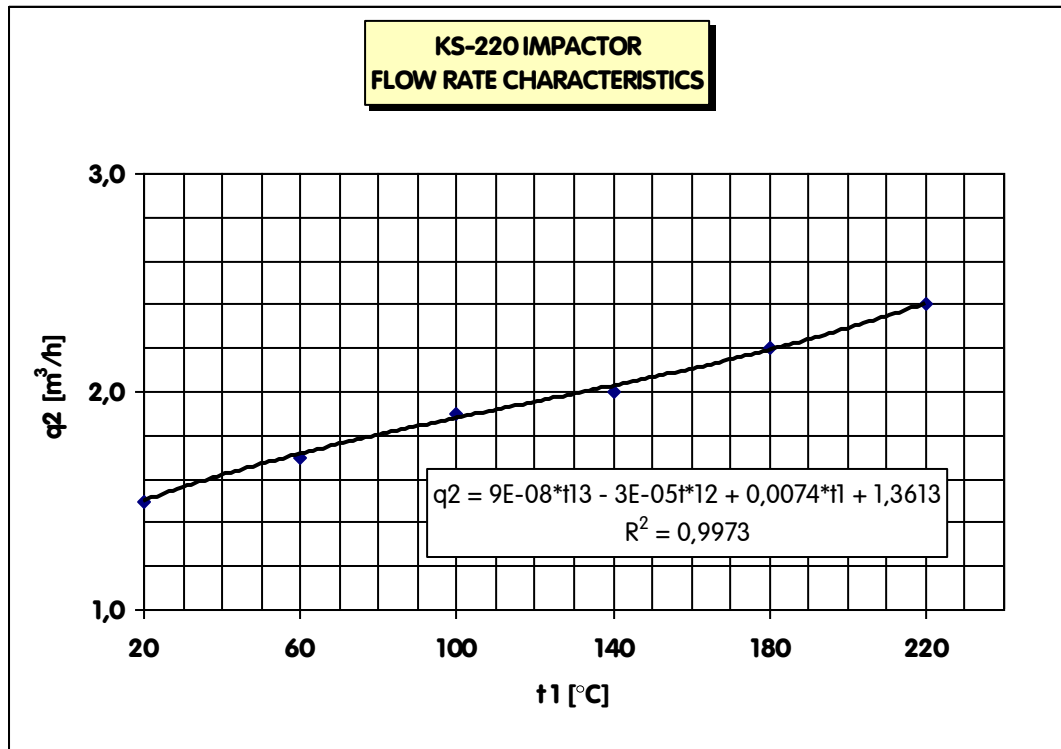
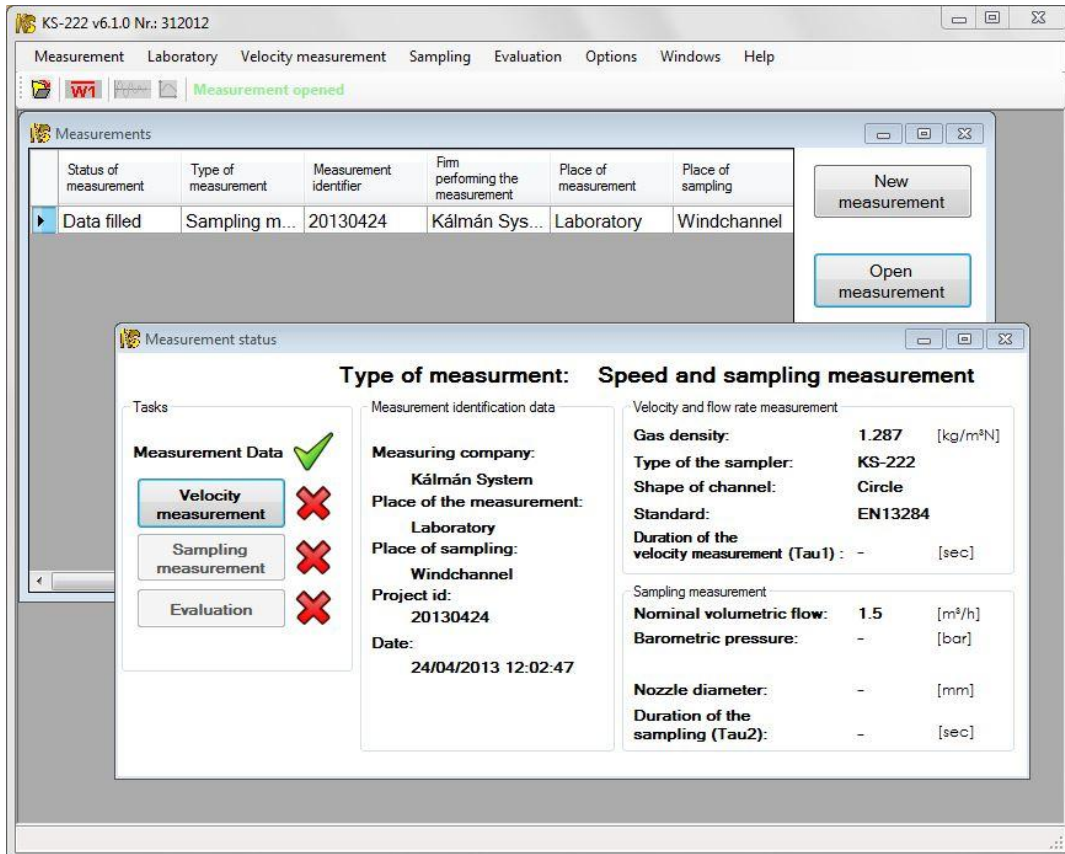


Figure 6.



AR-IZO Software



AR-IZO Software

3. Technical data

- | | |
|--|--|
| ■ Nominal flow rate depending on t1 | 1,5 [m ³ /h] to 2,3 [m ³ /h] |
| ■ Measuring range | 0,9 to 2,6 [m ³ /h] |
| ■ Aerodynamic resistance with clean filter | 42 [mbar] |
| ■ Number of impactor stages | 3×2 (three double stages) |
| ■ Particle separation values – cut points | Figure 5. or by AR-IZO 220 software |
| ■ Max. temp. w/ Teflon sealing | 220 [°C] |
| ■ Nozzles | Ø4,5; 5,6; 7,6; 10,7; 14; 17 [mm] |
| ■ Optional nozzles | Ø 5,0; 6, 2; 6,9; 8,5; 9,5[mm] |
| ■ Back-up filter | Ø43 [mm] |
| ■ Probe connection | C 3/8" thread |
| ■ Partial gas flow exhaust pipe | Ø19×4,5 [mm] |
| ■ Partial gas flow exhaust pipe connector | M 18×1,5 BOSCH-REXROTH |